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ABSTRACT

A practicum project involving the development of learning modules for introductory accounting at Castleton State College is described. After the initial step of evaluating educational materials in modular learning in accounting, learning objectives for introductory level acccounting were developed. The overall learning objectives for the unit were also stated in operational terms, and a subject outline was constructed to reflect the logical flow of topics and interrelationships among topics. The next step was to select units that were constructed relatively small so that the student would not attempt to cover too much material without mastering one area. Finally, learning objectives were developed for the total number of modules and stated in specific performance terms. This course emphasized the application of bookkeeping principles along with business problems and decisions. Appended is a flow chart indicating the study/testing sequence the student will use with the self-paced learning modules. The nine modules are included. (SW)

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THE DEVELOPMENT OF MODULAR LEARNING FOR INTRODUCTORY ACCOUNTING AT CASTLETON STATE COLLEGE

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Nova University in Partical Fulfillment of
the requirement for the
Degree of Doctor of Education

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ABSTRACT

The Development of Modular
Learning for Introductory
Accounting at
Castleton State College

by
Bryan L. O'Neil

The purpose of this practicum was the development of learning modules for elementary accounting at Castleton State College. The aim of this practicum was directed at making instruction more precise to meet the individual needs of each student. The researcher recognized that students learn in different ways at different rates.

The procedures that were followed were structured for the purpose of the development of module learning in Introductory Accounting. The first procedure was to review the literature in the area of instructional programs in accounting and to establish a working knowledge of self-paced instruction. A subject outline was developed and modular units were identified.

The results of this practicum better enables the instructor of accounting to develop a series of learning opportunities in a classroom or laboratory situation. The benefit of the development of modules for introductory level accounting was to enable both the student and the instructor the organization that enhances a step-by-step understanding of the accounting system. This brings about the development of self-paced learning.

It is the researcher's recommendation that the modular approach would enhance student learning supported by the research of this study. Students using the modular approach of introductory accounting are permitted their own direction and also encourages work toward educational objectives.

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Introduction

The purpose of this practicum was to develop learning modules for Introductory Accounting at Castleton State College. Traditionally, accounting has been taught through a series of almost identical classroom situations where the teacher dominates and does most of the talking and the student is in a passive role with little opportunity to respond.

Educators and administrators have a responsibility to look at alternative educational technologies. The aim of much of the innovation in instruction was directed at making instruction much more precise to meet the individual needs of the student. The purpose of this practicum was to develop a learning system that recognizes that students learn in different ways at different rates.

In order to develop an understanding of the educational material in the area of instructional programs,the researcher did an analysis of literature in the area of modular instruction. While combining the abilities of expertise in the area of business education, the researcher then combined this knowledge of modular learning with the learning objectives for the Introductory Accounting at Castleton State College. The subject outline was produced for each module unit being learned. The combination of research of business education as well as the research that has been done in the area of individualized education and modular learning experiences. The researcher was able to combine the two areas to obtain a finished product that can be used in the classroom at Castleton State College in the introductory level of accounting.

Background And Significance

Programmed instruction, while viewed by many as a recent development in education can be traced to 1809 when H. Charred was granted a patent for "a device designed to teach reading (Gardner,1966: pg.8)". However, B. Fred Skinner, a present authority in the field of programmed instruction, attributed Haleyon Skinner with the invention of the first true "teaching machine" - another piece of equipment for teaching reading, patented in 1866 (Gardner,1966: pg.8).

Later, the efforts of psychologists S.L. Presley in the 1920's to create a machine which could be used for multiple choice testing as well as for teaching, was a significant development in the study of possible applications programs to "produce changes in the effectiveness of instruction" (Gardner, 1966: pg.8). His machines were the first to utilize the concepts of "feedback" a fundamental characteristic of all modern programmed instruction.

However, the modern foundation of programmed instruction date from a 1954 paper entitled "The science of learning and the art of teaching", by Professor B. Fred Skinner of Harvard (Schramn, 1964: pg.11). He suggested that educational material quotations could be regarded as an accumulative rapport of behavior which would be analyzed as a number of small "steps representing increments of successive approximation to fonal mastery" (Schramn, 1964: pg.12).

Before describing in detail the theory and design underlying a typical program of today, an examination of the basic principles of learning was needed. The module units developed for this practicum were

designed to conform to these principles of learning to insure effective instruction and maximum learning. W.A. Johnson listed the seven principles of learning.

1. The principle of reinforcement
2. The principle of active participation
3. The principle of discovery
4. The principle of motivation
5. The principle of meaningfulness
6. The principle of sequence
7. The principle of transfer

(Johnson, 1965: pp. 25-26)

Although several different variations of programmed instruction were widely used, all of them are conformed to the following generally recognized characteristics, compiled by J.L. Hughs. Every student is able to pace himself throughout the program, thereby allowing "more latitude for individual differences in learning ability". The student was given a "relatively small" bit of information "called a frame" and then asked to answer a question or to complete a statement based on the information presented to him. "This was known technically as the stimuleous". The student then answers the question or completes the statement, or in technical terms, he is said to be making a response to the "stimuleous" presented (Hughs, 1962: pp. 2-3).

Programmed instruction was not used at Castleton State College in Introductory Accounting, as a result, the development of modules for accounting helped to enhance the student to develop at their own pace. It also helped to provide the tutoral help for making the module available for review.

In general usage, a module is any unit that is capable of being joined with another unit to form a larger structure. It is a relatively simple idea that has provided that basis for a new revolution in the fields of electronics, architecture, construction, and education. In education, the basic idea behind the module is not new. For years, the entire educational system has been predicated on a building block idea. Schools and colleges have held classes that make up courses that are taken during the academic term. On a smaller scale, the building block approach is found in lesson plans which subdivide class sessions into lessons in modern educational terminology. The term module, however, has taken a number of different meanings (Askins, 1970: pg.46).

In programmed instruction, the term module refers to a collection of frames that make up part of the instructional program. The frame is the basic unit used in programmed instruction and consists of a stimuleous response pattern that ends in a learned skill or concept. The frames provide a step by step pattern through the educational material to achieve a stated goal or objective for each frame and for each module (Edwards, 1974:P.278).

In self-paced instruction, the term module also refers to a building block but in this case unless programmed instruction is used, frames may not be involved. A module in a self-paced system like Alex consists of a unit of instruction on a specific topic (Dupree and Martin, 1974). As the student starts the topic, he is informed of the objectives and importance of the subject. In the Alex system, a series of visual and audio lessons transmit the skills and concepts using a film strip.

The size of a module from programmed instruction is based on the number of frames included. Since a sub-unit frame is used,

programmers have been more concerned about the length of the frame measured in words, sentences or ideas, than the module. In self-paced instruction, the module is the basic unit; its length will depend on the designer of the instructional system and, therefore, may vary considerably. For example, in Alex, the module is 15 to 20 minutes in length while in other systems, the modules are 40 to 60 minutes in length (Dupre & Dempsey, 1974: pg. 268.)

A learning or instructural module is a unit of instruction that is self contained and scientifically structured. The instructural module covers a specific topic and is carefully stated learned objectives specified in operational terms. The typical module uses multiple media forms to communicate facts and ideas and it utilizes carefully developed tests to measure achievement of learning objectives (Marchell, 1972: p. 36). The different applications to the term module in education all have in common the general idea behind the term, that of a building block. Each, however, represents a different building block. This practicum has dealt with the development of building blocks for Accounting I.

The instructional module is a product of the educational technology movement and is a unit of instruction and knowledge that has carefully identified objectives expressed in behavioral and operational terms. The behavioral objectives of the module interface with terminal learning objectives of the total instructional unit to form a unified whole.

In most applications of the module, multiple media are used to handle the instructional tasks. The instructor's role is to guide the student using the discussion process in the development of educational materials (Mager, 1962: pg.62).

A module, as a unit of instruction, is found in either a time constrained or non time constrained setting. In a completely individualized learning system where the system is both open ended and unregulated, a module represents a unit of knowledge. A module consists of specifically stated learning objectives in a set of individualized educational experiences necessary for the student to achieve the objectives. Achievement is measured in terms of a test called the post test because it comes after the learning experiences. In this idealized kind of educational situation, the student may pass through or experience the learning materials as many times as he likes before he takes the post test and achieves a satisfactory level of performance (Askins, 1970: pg. 55).

The elements considered to be the basis of all successful educational systems consists of:

1. Defining objectives or goals to be achieved.
2. Frequent feedback.
3. Continuous re-inforcement.
4. Individual pacing (Richmond: 1970, pg. 310)

There is evidence to show that people vary considerably in their ability to learn, mode of learning, student habits, interests and other facts considered essentially to the educational process.

In order to meet the challenge of these individual learning habits, the accounting module developed takes all the key elements of learning into consideration and provides a basis for the application of modern educational technology. This instructual module, whether considered part of a larger learning unit or an individual unit, is designed to provide a logical vehicle to allow an individual learner to achieve the objectives established. This practicum will provide insights into the design essential if accounting instructors are to be able to successfully apply this concepted modulized instruction.

In formulating the statement of objectives that communicates the intent of the instructor, the following three questions should be kept in mind: 1. What will the student be doing when he demonstrates he has achieved the stated objective? 2. What special conditions will be imposed on the student when he is achieving the objectives? 3. Whether the accepted levels of satisfactory performance and must be spelled out in detail (Mager, 1962: p.3).

The instructor must decide just what kind of behavior will be accepted as evidence of confidence or appreciation. What does a student do to show he has achieved these goals? This question must be answered as a modular are determined (Williams and Guy, 1974: pps 231-232). The pre-test is designed to determine if the student already has the knowledge contained in the module. Since the pre-test is a criteria examination, it is based on the same objective as the post test and, therefore, may be the same examination.

In developing the post-test, it is absolutely essential that the identified learning objectives are followed. In order to insure this, it is advisable to prepare the post-test before the educational media and subject outlines are prepared. The post-test is developed by building into the examination, items that provide solid evidence of achieving instructional objectives. This means that the instructor must decide in advance what he considers passing or acceptable performance (Williams and Guy, pps. 231-232).

There are two different instructional programs suitable for self-paced accounting instruction that are currently available from publishing companies. Both programs for the introductory accounting course were introduced in 1973. Other programs will likely become available in the future. A number of schools have experimented with their own locally produced materials.

Accounting's learning experience (Alex), by Dupree, Marter, and Carter is available through Prentice Hall. It is a flexible system suitable for individualized instruction or large group use. Alex consists of 50 mudules, each containing a coordinated film strip and audio tape, a student outline and separate student resource materials in written form. The student resource materials also contain extensive questions and problems. The audio visual unit is the core of each module and may be used independently of the written materials. The study testing sequence for using this

package on a self-paced basis is illustrated in Appendix B (Dupree, 1974: p. 273).

Accounting's principles; a multi-media program, by Curry and Frame is available through Charles E. Merrill Publishing Company. This program consists of a written textbook with integrated film strips and coordinated audio tapes. There are 30 modules somewhat comparable to textbook chapters which are further sub-divided into sections. Some of the sections are in written form while others are in audio visual format (Dupree, 1974: p. 274).

Again, the purpose for this practicum was to develop a learning system that recognizes that students learn in different ways at different rates. At Castleton State College, students come from greatly diversified areas. The instructor will find that modular learning can be a great asset in developing the students from various educational backgrounds.

Programmed instruction was not being used at Castleton State College in Introductory Accounting. As a result, the development of modules for accounting helped to enhance the student to develop at their own pace. It also helped to provide for tutorial help by making the modules available for review.

One of the main reasons why this practicum was important for Castleton State College was that business curriculum development and innovation is an important aspect to developing the business program at the college. The quality of the program and the development of students to better achieve within the program of

accounting is directly related to the long range plans of the college and its establishment of quality to communities in the state of Vermont.

The aim of much of the innovation that has taken place in instruction today is directed at designing instruction to better meet the individual needs of each student. This learning theory module has a direct relationship to this practicum. The development and application of new learning theory such as the module concept of instruction very much applies in this particular module for a practicum application. In the writer's opinion, the present system generally ignores individual learning differences, motivation, and most human behavior traits associated with the instructural process. Educational innovation has taken and is taking a wide variety of forms. Programmed instruction was clearly one of the first large moves to make the instructional process both more scientific and at the same time, more individual. In fact, some suggest that the current application of communication technology to education would not have been possible without the advent of programmed instruction in the Skinnerian concept of re-inforced learning. The Skinnerian organizational form and emphasis on differential re-inforcement provides educators with the basis and opportunity to apply modern communication technology (Richmond, 1970: p.17).

Procedures

The procedures that were followed in this practicum were structured for the purpose of the development of modular learning in Introductory Accounting at Castleton State College. The procedure, as listed below, took the form of a finished product and was used in the classroom to develop the student to their full potential. The following procedures to be followed were:

1. The evaluation of educational materials in the area of instructional programs in accounting to establish a working knowledge of self-paced instruction.
2. To determine the learning objectives for introductory accounting by segmenting the vocal points of knowledge within the context of Accounting I.
3. Select a course which the researcher knew exceptionally well from both a technical as well as a conceptional viewpoint.
4. State the overall learning objectives for this unit in operational terms. These became the internal objectives for this unit.
5. Develop a subject outline for the unit. This outline reflected the logical flow of topics and inter-relationship between topics.

6. Using the subject outline, identify modular units when selecting modules, try to select units that were relatively small and atonomous, work with smaller units rather than large ones. Precise behavioral objectives were easier to establish for the smaller ones.

7. Write down in specific performance terms, the behavioral objectives for each module identified. As indicated in the earlier discussion on learning objectives, this was a critical area and the more precise the statements, the better the educational results.

Limitations and Assumptions

Because of the limited search of educational accounting material, there is a risk of not including pertinent curriculum for introductory accounting. As a result, the modules were designed by the researcher to best suit the needs of students at Castleton State College. Although a sampling of materials was used, the quantity of material may be less than desirable.

To generalize beyond the accounting program at Castleton State College may not be desirable. The accounting curriculum for the modules were designed for students with four credit course load. As a result, there might be more time constraints in other accounting programs. These modules were designed for at least seventy-five hours in a two semester year system.

The researcher saw a need for a more individualized means of instruction for accounting students at Castleton State College to better their performance in the elementary levels. This may not be the case in other accounting programs and should be kept

in mind in the implementation of these modules at other institutions.

Because of the content of these modules, it is limited to the area of accounting education.

Results

To follow the format of the practicum, the reader will take step 1 of the procedure and discuss the results.

Step 1 of the procedure was the evaluation of educational material in the area of instructional programs in accounting to establish a working knowledge of self-paced instruction. In the Background and Significance section of this practicum, one can see an in depth review of the current literature in the area of modular instruction. The development of modular learning in Accounting I at Castleton State College was the result of accumulation of this literature to provide a product that could be used in the Accounting I classroom.

Step 2 of this practicum, which was to develop the learning objectives for introductory level accounting can be readily seen in the Appendix A of this practicum. One can see in each area, the stated objectives in each module 1-9. These modules were based on standard accounting procedures that were taught from a traditional approach in the classroom. As the reader can see in Step 3, the area the researcher has chose to develop, was in the area of introductory level accounting courses which the instructor has been teaching for the past three years.

As one can see in Step 4, the researcher constructed basic overall objectives for each unit and operational terms. These operational terms are laid out at the onset of each module so the reader

may know what the learning objectives of that learning unit are. With the learning objectives well set in the student's mind, the outline for each unit has a logical flow of topics that exist (Step 5). In procedure 6, selected units were constructed relatively small so that the student would not attempt to cover too much material without mastering one area and would not go on until that area was understood. All of this material is also shown in Appendix A at the end of this practicum.

In Step 7, the researcher then proceeded to write down in specitic performance terms, the learning objectives for the total number of modules. In Accounting I, this course emphasized the application of bookkeeping principles along with business problems and decisions. For the person enrolled in this course as an elective, knowledge gained would be of benefit in managering personal financial affairs. These behavioral objectives are not academic learning objectives. These objectives were constructed to change the bahavior of the individual student to better understand the business world and many aspects of industry, as one can see in the Appendix A.

As the reader looks at Appendix B, one can also establish from Alex the study testing sequence using the package of self-paced instruction. This format or Flow Chart that exists in Appendix B shows us the process by which a student will view modules 1-9. This Flow Chart will explain the interaction between the instructor and the student not only including a self quiz, but as well as an

instructor's quiz on the material that is represented in that individual module. If both are passed, the student may go on to any additional modules.

As a result of following the procedures of this practicum, the researcher was able to develop modular learning units in the introductory accounting level at Castleton State College. The reader can see as a finished product Appendix A, the following syllabus of modular units for Accounting I.

Discussion, Implications and Recommendations

The purpose of this practicum was to develop modular learning units for introductory accounting at Castleton State College. It is recommended that further study be made in the area of effectiveness of this method of learning at the introductory level of accounting.

The purpose of this practicum was to develop a product and the implied results can be seen in the following literature supports of modular learning.

As a result of the review of literature of this practicum, one can see the recommendations that could logically be made from the results.

1. Programmed instruction permits the student to participate actively in the educational process.
2. Students are able to pace themselves through the program.
3. Greater individualism is achieved.
4. Students are highly motivated because of the immediate reinforcement they receive.
5. In general, students learn more material at a faster rate. (Edwards; 1974: pg. 287)

Several studies have attempted to provide evidence to support or repute these claims and from the study of Billy E. Askins, the following conclusions were made. As compared with the conventional

lecture demonstration technique, the amount of time required to teach the example instructional unit, can be reduced by approximately 25% without sacrificing any loss or achievement test scores by using the programmed textbook. More generally, the study is evidence that use of effective programming material makes it possible to teach technical school subjects (and surely many phases of college level accounting as well) in a shorter period of time and still obtain the terminal objectives of the course including no loss in achievement scores. Use of programmed materials, especially in conjunction with other instructional techniques, or media, can greatly improve the effectiveness of instruction (Askins, p. 163).

The committee on multi media instruction in accounting in the American Accounting Association included the results of its own survey of programmed instruction in its 1972 report. The committee stated responses to ways in which programmed text books aid in learning process. These included such items as "pacing, individual learning, incremental steps, self-correcting, and immediate reinforcement." Among other cited benefits were "rapid acquisition of basic concepts, systematic coverage of subject matter, low aptitude students accomplish more with programmed text than with traditional text." It forces the student to learn the material when reading the text. Some responses to the disadvantages of programmed text books were: "Students find it a tedious process-uninspiring." "Short retention". "Students are forced to master

each step before he can proceed the whole". "Lack of availability of good material and relatively high cost". "Programmed Text Books cannot be used as a reference book". (Committee on Multi Media Instruction in Accounting, 1972; pp. 118-119).

Another study, "Programmed instruction in elementary accounting - is it successful?", by William Markell and Wilfred A. Pemberton stated: after working with the text for a year, it seemed to the researcher that the text does what it is supposed to do and perhaps a little more. Students appear to learn somewhat better with the programmed text. Also, we found that the use of the program text stimulated the discussion in the classroom. The difficulty of review must be considered as one of the major disadvantages of the text. Based on our experience, the programmed text should certainly be considered an alternative for elementary accounting course (Markell and Pemberton, 1972: p. 384).

Learning modules enhance students' opportunity for learning by not only increasing the use of a wide range of technology but by more profitably using the talents of the teacher. Much of the energy and intelligence which teachers now spend lecturing in the classroom, can be shifted in learning modules to working with students in tutoring and small group discussions and to preparing potential educational materials. The new forms of technology give the teacher added capability and extend the possibilities of education. Students should discover things for themselves and tech-

nology provides this ability (Johnson, 1965: pg. 16).

Group pace and group instruction is less individualized and more dehumanizing than the application of machines or technology to education. Students using the learning module approach are able to move to a greater degree at their own pace than they are in group instruction even though both may be time constrained. The use of technology in the module increased the educational alternatives and permits the student in his own direction while it encourages work toward established educational objectives.

Accounting instructors should be able to adapt to current trends in higher education with little difficulty. Traditional accounting courses have long incorporated some of the learning approaches that are just now being enhanced by other subject areas.

For instance, accounting education has always been performance oriented as evidence by the type of test that have been given. The step to behavioral objectives criteria based on testing, should be easy for accounting teachers. The step to self-paced instruction is a more difficult one. A significant investment in both hardware and software is required. At this point in time, equipment capacity far exceeds the software programs available. Instructional programs for introductory accounting are now available from publishing companies is audio visual formats suitable for self-paced use.

Self-paced instruction can hold benefits for students, instructors, and administrators. There are, of course, some problems that

must be overcome particularly when students and institutions have had experience only with traditional approaches to education.

Traditional approaches to the teaching of Accounting I have been modified and improved by introducing materials such as this practicum at Castleton State College. These areas benefit the motivation of the student in the accounting course. Extensive debate and research should be encouraged among accounting educators, and practitioners for the purpose of developing a more united approach to accounting education with particular reference to the first course of accounting. Accounting educators must rethink and attempt to achieve a consensus with the respect to the objectives of the first course. Modular learning helps to better prepare the student for these objectives of each learning unit. Programmed instruction materials and accounting have made a contribution to accounting education and should continue to do so. Learning should be exciting and any new technology available to instructors that give the learner a greater opportunity to learn should be considered.

The positive change that will take place at Castleton State College is the ability of the instructor of Accounting I to use modular learning in the lab section of the course Accounting I. This changes the format for the lab at the present time because the session is now being used as a problem solving tutorial session. The modular procedure of learning units will be instituted within

the one lab a week session for an hour and a half. To test the effectiveness of this type of learning at Castleton State College, further study will be made in this area and if all of the data is accumulated and the results are positive in the area of teacher effectiveness, the modular type of accounting education will be instituted at Castleton State College. Any feedback during this process of experimentation in the accounting lab will then be used to review any of the curriculum of the module or individual units of the module to make the program more successful in its attempt to educate introductory level students at Castleton State College.

The alternatives that are discussed above will help to solve the problem of many students coming from diverse backgrounds. As a result, each student with different qualifications and capabilities may, as a result of this study, take Accounting 1 and develop at their own individual pace.

BIBLIOGRAPHY

Askins, Billey, E., "Determining the Effectiveness of Programmed Instruction - A Training Course Example", The Accounting Review, January 1970.

Carter, Dupree and Marden, Accounting: A Learning Experience (ALEX), New York: Prentice-Hall, 1973.

Committee on Multi-Media Instruction in Accounting, American Accounting Association, The Accounting Review, 1972.

Curry, D.W. and Robert Frame, Accounting Principles: A Multi-Media Program, Columbus, Ohio, Charles E. Merrill Publishing Company, 1973.

Dupree, Dempsey, "Self-Paced Instruction", Accounting Education Problems and Prospects, Washington: American Accounting Association, 1974.

Edwards, James Don, "Programmed Instruction". Accounting Education Problems and Prospects, Washington: American Accounting Association, 1974.

Garner, W. Lee, Programmed Instruction, New York: The Center for Applied Research in Education, Inc., 1966.

Guy, L.M. and D.Z. Williams, "Developing Behavioral Objectives for Accounting". Accounting Education Problems and Prospects, Washington: American Accounting Association, 1974.

Hughs, J.L., Programmed Instruction for Schools and Industry, Chicago: Science Research Associates, 1962.

Johnson, Wagner Anton, An Integration of Learning Theory and Accounting Education, University of Illinois: Unpublished Ph. D. Thesis, 1965.

Lewis, James, Administering the Individualized Instructional Program, New York: Packer Publishing Company, Inc., 1971.

Mager, Robert F., Preparing Instructional Objectives, Belmont, California: Pearon Publishing Company, 1962.

Marhell, William and Wilfred A. Pemberton, "Programmed Instruction In Elementary Accounting - Is It Successful?", The Accounting Review, April, 1972.

Pillsbury, Wilbur, F., Principles of Accounting, Pelham Manor, New York: South Western Publishing Co., 1976.

Schramn, Wilbur, What Is Programmed Instruction, California: Stanford University Press, 1964.

Richmond, Kenneth W., The Concept of Educational Technology, Oxford Circle, London, England: Weidenfeld I Nicolson, 1970.

APPENDIX A

Modular Learning For Introductory Accounting At Castleton State College

Prepared By

Asst. Prof. Bryan O'Neil

LEARNING OBJECTIVES

ACCOUNTING I This course emphasizes the application of accounting principles along with business problems and decisions. For the person enrolled in this course as an elective, knowledge gained will be of benefit in managing personal financial affairs.

1. To teach the student the basic bookkeeping equation, debits and credits.
2. To acquaint students with business terms.
3. To teach the bookkeeping cycle.
4. To familiarize students with journals and their functions.
5. To develop an understanding of business forms, procedures, and equipment used today.
6. To develop occupational intelligence needed by all business workers.
7. To bring about a sound preparation for future study.
8. To familiarize the student with the types of transactions and their effects on the business world.
9. To enable a student to manage his own affairs wisely with emphasis on wise planning and expenditures.
10. To develop an understanding of the relations between recording transactions by machine or electronic processes and the manual method.
11. To develop a desirable business attitude concerning neatness and work habits.
12. To develop an awareness of certain problems that face a business executive.
13. To develop an understanding of the information contained in the financial statements and their purpose in helping to make decisions.

MODULE I

ACCOUNTING FOR ASSETS, LIABILITIES AND CAPITAL

Accounting

Recording

Summarizing

Analyzing _____ Financial reports of an organization

Interpreting

Uses of Accounting

Schools and clubs

Business and Finance

Government

Churches

Users of Accounting

Management

Investors

Bankers

Governments

Objectives

1. Define: accounting, assets, liabilities, and capital.
2. State the effect of financial transactions on the balance sheet.
3. Stress the constant equality of the basic accounting equation:

Assets = Liabilities + Capital

Review:

1.

Assets	=	Liabilities	+	Capital (Owner's Equity)
Resources and properties of value owned by a business		Obligations or debts of a business		Owner's claim upon the assets of the business

2. Entity Concept: The records of the owner's business activities must be kept separate from the owner's personal records.
3. Transactions cause INCREASES and/or DECREASES in the asset, liability, and/or capital sections of the balance sheet.

MODULE 2

ESSENTIALS OF THE DEBIT-CREDIT PROCEDURE

The Accounting Equation:

Assets = Liabilities + Capital (Owners Equity)

Debit and Credit:

Asset Account		=	Liability Accounts		+	Capital Accounts	
Debit	Credit		Debit	Credit		Debit	Credit
*****				******			******

The *** represents the side of the "T" account that normally contains the balance of the account. Notice that asset account normally have balances on the DEBIT side while liability and capital accounts, on the other side of the equal sign, normally have balances on the opposite side, or CREDIT, side.

Objectives:

1. Present the DEBIT-CREDIT procedure.
2. Illustrate the use of "T" accounts.
3. Provide rules for the special capital (owners equity) accounts:
   Capital
   Drawing
   Revenue
   Expense

Review:

TYPES OF ACCOUNTS	INCREASE	DECREASE	NORMAL BALANCE
Asset	Debit	Credit	Debit
Liability	Credit	Debit	Credit
Capital (owners equity)			
Capital	Credit	Debit	Credit
Revenue	Credit	Debit	Credit
Drawing	Debit	Credit	Debit
Expense	Debit	Credit	Debit

These are the same.

MODULE 3

DEBIT-CREDIT TRANSACTIONS WITH THE JOURNAL, LEDGER, AND TRIAL BALANCE

If you have not mastered the debit-credit procedure as shown in the table, review them thoroughly before continuing with this module.

Objectives:

1. Review DEBIT-CREDIT procedures.
2. Show that the debits must equal the credits for each transaction.
3. Provide application of the above two objectives through use of the journal, ledger, and trial balance.

Review:

1. Form of journal entry:
   (Name of debited account XXX
   (Name of credited account XXX

2. Form of ledger entry:

(Name of Debited Account)		(Name of Credited Account)	
Debit	Credit	Debit	Credit
XXX			XXX

3. The trial balance contains the balance of account in the ledger.

FORMS OF THE FINANCIAL STATEMENTS

Journalize Transactions

Post Transactions
to ledger

Prepare a Trial Balance

(Additional steps discussed in Modules 5 and 6)

Prepare Financial Statements:

Income Statement
Capital Statement
Balance Sheet

(cycle continued in Modules 7 and 8)

Objectives:

1. Review the initial steps of the accounting cycle.

2. Illustrate the general forms of the income statement.

Review:

1. Journalize the transactions.

2. Post the transactions to ledger.

3. Prepare a trial balance .
(additional steps discussed in Modules 7 and 8)

4. Prepare the financial statements:
Income Statements
Capital Statement
Balance Sheet
(cycle continued in Modules 7 and 8)

5. Note the interrelationships of the financial statements:
   (a) The net income (or loss) from the income statement is carried over to the capital statement.
   (b) The ending amount for capital in the capital statement is carried over to the balance sheet.

ADJUSTING ENTRIES FOR PREPAID, ACCRUED, AND DEPRECIATION EXPENSES

Why Have Adjustments?

Bring the accounts up to date.
Determine more accurately the net income (loss) for a specific period of time.
Match the revenues and expenses for the same period of time.

Prepaid Expense Accounts

Asset		Expense Accounts
Supplies	----------	Supplies Expense
Prepaid Rent	----------	Rent Expense

Accrued Expense Accounts

Liability Accounts		Expense Accounts
Interest Payable	----------	Interest Expense
Salaries Payable	----------	Salary Expense

Depreciation Expense Accounts

Contra-Asset Account		Expense Accounts
Accumulated Depre.-Equip.	----------	Depre. Expense - Equip.
Accumulated Depre.-Bldg.	----------	Depre. Expense - Bldg.

Objectives:

1. Stress the reason for adjusting entries.

2. Define and use prepaid, accrued and depreciation expenses.

Review:

Why Adjustments - Bring the account balances up to date before the preparation of the financial statements.

How to Adjust the Accounts - Example adjusting entries for:

Prepaid Expenses

Rent Expense	XXX	
Prepaid Rent		XXX
Advertising Expense	XXX	
Prepaid Advertising		XXX

Accrued Expenses

Salary Expense	XXX	
Salaries Payable		XXX
Interest Expense	XXX	
Interest Payable		XX

Depreciation Expenses

Depreciation Expense-Bldg.	XXX	
Accumulated Depre.-Bldg.		XXX
Depreciation Expense-Equip.	XXX	
Accumulated Depre.-Equip.		XXX

MODULE 6

THE EIGHT COLUMN WORK SHEET

Need For The Work Sheet ---------- Recording the effect of adjustments

Verifying arithmetic accuracy

Arranging data in logical form for financial statements.

Objectives:

1. State the purpose of the work sheet.
2. Show how the adjustments are entered on a worksheet.
3. Show how the adjustments alter the trial balance amounts in preparing the income statement and balance sheet columns of a worksheet.

Review:

1. Using the ledger of accounts, list the account titles and complete the trial balance columns of the worksheet.
2. Enter the adjustments in the adjustment column of the worksheet.
3. Complete the income statement and balance sheet columns of the worksheet to determine the net income or net loss.

CLOSING ENTRIES AT END OF ACCOUNTING PERIOD

Permanent Accounts	Temporary Accounts
Assets	Revenues
Liabilities	Expenses
Capital	Income Summary
	Drawing

Objectives:

1. Define the permanent and temporary types of accounts.
2. Present essentials of the closing process.

Review:

1. Close revenue accounts to the income summary account.
2. Close expense accounts to the income summary account.
3. Close the income summary account to the capital account.
4. Close the drawing account to the capital account.

THE COMPLETE ACCOUNTING CYCLE ILLUSTRATED

Step 1	Journalize Transactions	
Step 2	Post Transactions to the Ledger	
Step 3	Prepare a Worksheet	
Step 4	Prepare financial statements:	Income Statement Capital Statement Balance Sheet
Step 5	Journalize and Post the Adjusting Entries	
Step 6	Journalize and Post the Closing Entries	
Setp 7	Prepare a Post-Closing Trial Balance	

Objectives:

Present an illustration of the complete accounting cycle.

Review:	Module
1. Journalize the transactions	3
2. Post the transactions to the ledger	3
3. Prepare a worksheet	6
4. Prepare the three financial statements	4
5. Journalize and post the adjusting entries	5
6. Journalize and post the closing entries	7
7. Prepare the post-closing trial balance	8

THE COMPLETE ACCOUNTING CYCLE: COMPREHENSIVE EXERCISE

Comprehensive Exercise

The module contains a comprehensive exercise which you can use to self-test your understanding of complete accounting cycles. This is a review of the material in Modules 1 through 8. The exercise will take approximately one hour to complete.

Summary of the Complete Accounting Cycle

1. Journalize the transactions.
2. Post the transactions to the ledger.
3. Prepare a worksheet.
4. Prepare the three financial statements:
   a. Income Statement
   b. Capital Statement
   c. Balance Sheet
5. Journalize and post the adjusting entries.
6. Journalize and post the closing entries.
7. Prepare the post-closing trial balance.

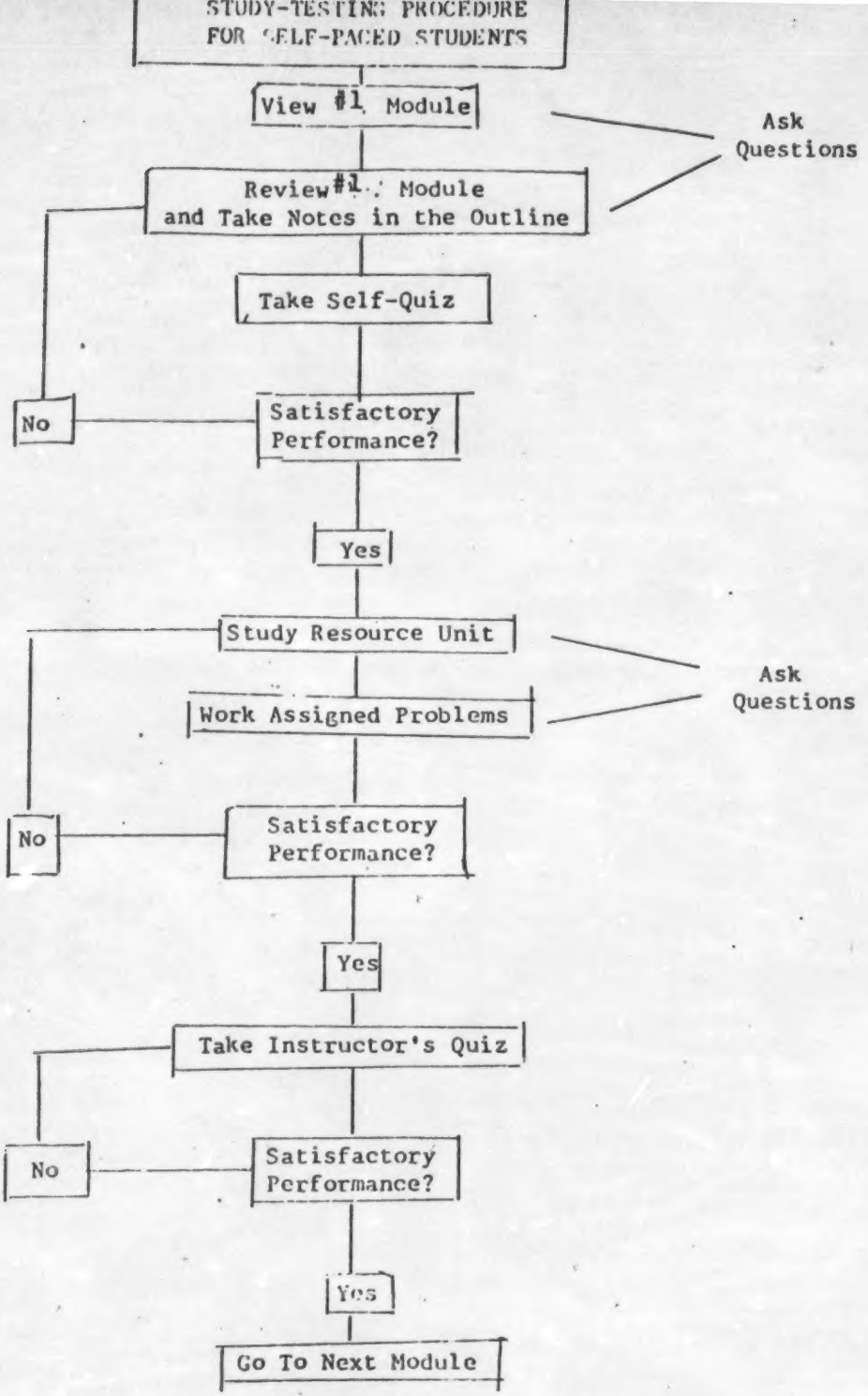
Objectives:

Present an exercise covering the seven steps of the accounting cycle.

Review:

1. Journalize the transactions.
2. Post the transactions to the ledger.
3. Prepare a worksheet.
4. Prepare the three financial statements, Income, Capital, and Balance Statements.
5. Journalize and post the adjusting entries.
6. Journalize and post the closing entires.
7. Prepare the post-closing trial balance

APPENDIX B


STUDY-TESTING PROCEDURE
FOR SELF-PACED STUDENTS
View #1 Module
Ask Questions
Review #1 Module and Take Notes in the Outline
Take Self-Quiz
No
Satisfactory Performance?
Yes
Study Resource Unit
Ask Questions
Work Assigned Problems
No
Satisfactory Performance?
Yes
Take Instructor's Quiz
No
Satisfactory Performance?
Yes
Go To Next Module